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Agricultural Memorandum No. 266

Regression equations and frequency distributions for excess winter rain

As indicated in Agricultural Memorandum 264, the excess winter rain can be analysed with respect to the mean annual rainfall (R') over the period considered, namely 1940-59, (ending March 1960). The results are given in the Appendix.

If the 'normal' rainfall average is substituted in these equations the result will be an approximation to the mean values of excess rain over the 'normal' rainfall average period, namely 1916-1950.

If the rainfall normals are substituted into the equations of Agricultural Memorandum 264 the result will be averages for the sample period 1940-1959.

The distribution about the average can be deduced from the extremes, quartiles, mean and standard deviation.

A simpler representation can be obtained by use of 10 sample percentages. The following table gives the percentages of average of the mean excess rain which could be expected, in jumbled order, in a 10 year period.

Annual Rainfall (in)	Percentage of Mean									
	Least	2	3	4	5	6	7	8	9	Most in 10 years
20	10	34	53	77	87	101	116	139	172	211
22	17	40	57	77	88	101	115	137	165	203
24	24	46	61	77	88	101	115	135	158	195
26	30	52	65	77	88	101	114	133	153	187
28	35	55	67	78	89	101	114	131	148	182
30	40	58	69	80	90	102	113	128	143	176
32	45	61	72	82	92	102	112	125	138	171
34	48	63	73	83	92	102	112	124	137	166
36	50	65	74	84	92	102	111	123	136	163
38	52	66	75	84	92	102	110	122	136	161
40	53	67	76	84	93	102	110	122	135	158
42	54	68	77	85	93	102	109	121	134	157
44	55	69	78	85	93	102	109	121	133	155
46	56	70	78	86	93	102	109	120	133	153

Any comments or criticism of this memorandum should be sent to the authors.

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Bracknell
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Appendix

Excess Rain Statistics 1940-59

(a) Least in 20 years	North	0.51R' - 10.05
	Midlands	0.74R' - 16.90
	South West	0.67R' - 16.25
	South East	0.22R' - 3.75
	East	0.23R' - 4.65
	England	0.56R' - 12.15
(b) 25% less	North	0.76R' - 13.55
	Midlands	0.71R' - 12.30
	South West	0.63R' - 10.45
	South East	0.71R' - 12.95
	East	0.89R' - 16.30
	England	0.69R' - 11.95
(c) Mean	North	0.79R' - 11.25
	Midlands	0.87R' - 14.10
	South West	0.81R' - 12.65
	South East	0.81R' - 12.80
	East	0.70R' - 10.25
	England	0.83R' - 13.00
(d) 25% more	North	0.82R' - 9.05
	Midlands	0.88R' - 12.00
	South West	0.82R' - 9.90
	South East	1.10R' - 17.75
	East	0.91R' - 13.10
	England	0.91R' - 12.60
(e) Most	North	1.11R' - 10.55
	Midlands	1.30R' - 17.45
	South West	1.08R' - 10.85
	South East	1.32R' - 18.40
	East	0.79R' - 6.05
	England	1.22R' - 15.15
(f) S.D. of mean	North	0.10R' + 1.56
	Midlands	0.135R' + 0.18
	South West	0.12R' + 1.22
	South East	0.23R' - 2.22
	East	0.18R' - 1.09
	England	0.177R' - 0.82

R' = mean annual rainfall
April 1940-March 1960